Completion of high school is often the minimum educational requirement to become a blue-collar worker supervisor, but workers generally receive training in human resources, computer software, and management before they advance to these positions. Although many workers with high school diplomas still rise through the ranks, employers increasingly seek applicants with postsecondary technical degrees. In high-technology industries, such as aerospace and electronics, employers may require a bachelor's degree or technical school training. Large companies usually offer better opportunities for promotion to blue-collar worker supervisor positions than do smaller companies.

In most manufacturing companies, a degree in business or engineering, combined with in-house training, is needed to advance from supervisor to department head or production manager. In the construction industry, supervisors increasingly need a degree in construction management or engineering if they expect to advance to project manager, operations manager, or general superintendent. Some use their skills and experience to start their own construction contracting firms. Supervisors in repair shops may open their own businesses.

Job Outlook

Employment of blue-collar worker supervisors is expected to grow more slowly than the average for all occupations through 2008. As the number of workers in the economy increases, so will the need to supervise these workers. Organizational restructuring and new developments in technology, however, will moderate employment growth. In addition to growth, many openings will arise from the need to replace workers who transfer to other occupations or leave the labor force.

Projected job growth varies by industry. In manufacturing, employment of supervisors is expected to show little to no change despite an increase in manufacturing jobs as each supervisor is expected to oversee more workers. This trend reflects the increasing use of computers to meet supervisory responsibilities, such as production analysis and scheduling, greater involvement of production workers in decisionmaking, and the formation of self-directed work teams. These developments are not as prevalent in construction and most other nonmanufacturing industries, where the employment of blue-collar worker supervisors is expected to rise along with employment of the workers they supervise.

Because of their skill and seniority, blue-collar worker supervisors often are protected from layoffs during a recession. However, some supervisors in the highly cyclical construction industry may be laid off when construction activity declines.

Earnings

Median annual earnings for blue-collar worker supervisors were $37,180 in 1998. The middle 50 percent earned between $28,210 and $48,290. The lowest 10 percent earned less than $21,910, and the highest 10 percent earned over $71,320. Most supervisors earn significantly more than the workers they supervise. Although most blue-collar workers are paid by the hour, the majority of supervisors receive an annual salary. Some supervisors receive extra pay when they work overtime. Median annual earnings in the industries employing the largest number of blue-collar worker supervisors in 1997 were:

Nonresidential building construction	$39,700
Motor vehicle dealers	37,500
Local government, except education and hospitals	36,500
Residential building construction	35,800
Miscellaneous plastics products (manufacturing)	31,500

Related Occupations

Other workers with supervisory duties include those who supervise professional, technical, sales, clerical, and service workers. Some of these are retail store or department managers, sales managers, clerical supervisors, bank officers, head tellers, hotel managers, postmasters, head cooks, head nurses, and surveyors.

Sources of Additional Information

For information on management development programs for blue-collar worker supervisors, contact:

☛ American Management Association, 1601 Broadway, New York, NY 10019. Internet: **http://www.amanet.org**

☛ National Management Association, 2210 Arbor Blvd., Dayton, OH 45439. Internet: **http://www.nma1.org**

☛ American Institute of Constructors, 1300 N. 17th St., Suite 830, Rosslyn, VA 22209.

☛ AIC Constructor Certification Commission, 466 94th Ave. North, St. Petersburg, FL 33702. Internet**: http://www.aicnet.org**

Fishers and Fishing Vessel Operators

(O*NET 79999E)

Significant Points

- The proportion of self-employed workers is among the highest in the workforce.
- Many jobs require strenuous work, long hours, and provide only seasonal employment.
- Employment is projected to decline, due to depletion of fish stocks and new Federal and State laws restricting fishing.

Nature of the Work

Fishers and fishing vessel operators catch and trap various types of marine life for human consumption, animal feed, bait, and other uses. (Aquaculture—the raising and harvesting for commercial purposes of fish and other aquatic life in ponds or confined bodies of water—is covered in the *Handbook* statement on farmers and farm managers.)

Fishing hundreds of miles from shore with commercial fishing vessels—large boats capable of hauling a catch of tens of thousands of pounds of fish—requires a crew including a captain, or skipper, a first mate and sometimes a second mate, boatswain, and deckhands with specialized skills.

The *captain* plans and oversees the fishing operation—the fish to be sought, the location of the best fishing grounds, the method of capture, the duration of the trip, and the sale of the catch.

The captain ensures the fishing vessel is seaworthy; oversees the purchase of supplies, gear, and equipment such as fuel, netting, and cables and hires qualified crew members and assigns their duties. The captain plots the vessel's course, using navigation instruments such as compasses, sextants, and charts. Additionally, vessels are equipped with electronic navigational equipment such as autopilots, loran systems, and satellite navigation systems. Ships also use radar to avoid obstacles and depth sounders to indicate the water depth and the existence of marine life between the vessel and sea bottom. The captain directs the fishing operation through the officers, and records daily activities in the ship's log. Upon returning to port, the captain arranges for the sale of the catch—directly to buyers or through a fish auction—and ensures each crew member receives the prearranged portion of adjusted net proceeds from the sale of the catch. Some captains have begun buying and selling fish via the Internet; and as electronic commerce grows as a method to find buyers for fresh catch, more captains may use computers.

The *first mate*—the captain's assistant, who must be familiar with navigation requirements and the operation of all electronic equipment—assumes control of the vessel when the captain is off duty. Duty shifts, called watches, usually last 6 hours. The mate's regular duty, with the help of the boatswain and under the captain's oversight, is to direct the fishing operations and sailing responsibilities of the deckhands. These include the operation, maintenance, and repair of the vessel and the gathering, preservation, stowing, and unloading of the catch.

The *boatswain*, a highly experienced deckhand with supervisory responsibilities, directs the *deckhands* as they carry out the sailing and fishing operations. Before departure, the boatswain directs the deckhands to load equipment and supplies, either by hand or with hoisting equipment, and to untie lines from other boats and the dock. When necessary, boatswains repair fishing gear, equipment, nets, and accessories. They operate the fishing gear, letting out and pulling in nets and lines. They extract the catch such as pollock, flounder, menhaden, and tuna, from the nets or lines' hooks. Deckhands use dip nets to prevent the escape of small fish and gaffs to facilitate the landing of large fish. They then wash, salt, ice, and stow away the catch. Deckhands must also ensure that decks are clear and clean at all times and the vessel's engines and equipment are kept in good working order. Upon return to port, they secure the vessel's lines to and from the docks and other vessels. Unless *lumpers*, or laborers, are hired, the deckhands unload the catch.

Large fishing vessels that operate in deep water generally have technologically advanced equipment, and some may have facilities on board where the fish are processed and prepared for sale. Such vessels are equipped for long stays at sea and can perform the work of several smaller boats.

Some full-time and many part-time fishers work on small boats in relatively shallow waters, often in sight of land. Navigation and communication needs are modest, and there is little need for much electronic equipment or provisions for long stays at sea. Crews are small—usually only one or two people collaborate on all aspects of the fishing operation. This may include placing gill nets across the mouths of rivers or inlets, entrapment nets in bays and lakes, or pots and traps for shellfish such as lobsters and crabs. Dredges and scrapes are sometimes used to gather shellfish such as oysters and scallops. A very small proportion of commercial fishing is conducted as diving operations. Depending upon the water's depth, divers—wearing regulation diving suits with an umbilical (air line) or a scuba outfit and equipment—use spears to catch fish and use nets and other equipment to gather shellfish, coral, sea urchins, abalone, and sponges. In very shallow waters, fish are caught from small boats having an outboard motor, from rowboats, or by wading. Fishers use a wide variety of hand-operated equipment—for example, nets, tongs, rakes, hoes, hooks, and shovels—to gather fish and shellfish; catch amphibians and reptiles such as frogs and turtles; and harvest marine vegetation, such as Irish moss and kelp.

Fishers may spend long shifts at sea.

Although most fishers are involved with commercial fishing, some captains and deckhands are primarily employed in sport or recreational fishing. Typically, a group of people charter a fishing vessel—for periods ranging from several hours to a number of days—for sport fishing, socializing, and relaxation and employ a captain and possibly several deckhands.

Working Conditions

Fishing operations are conducted under various environmental conditions, depending on the region of the country and the kind of species sought. Storms, fog, and wind may hamper fishing vessels. Divers are affected by murky water and unexpected shifts in underwater currents.

Fishers and fishing vessel operators work under hazardous conditions, and often help is not readily available. Malfunctioning navigation or communication equipment may lead to collisions or shipwrecks. Malfunctioning fishing gear poses the danger of injury to the crew, who also must guard against entanglement in fishing nets and gear, slippery decks resulting from fish processing operations, ice formation in the winter, or being swept overboard—a fearsome situation. Also, treatment for any serious injuries may have to await transfer to a hospital. Divers must guard against entanglement of air lines, malfunction of scuba equipment, decompression problems, and attacks by predatory fish.

Fishers and fishing vessel operators face strenuous outdoor work and long hours. Commercial fishing trips may require a stay of several weeks, or even months—hundreds of miles away from home port. The pace of work varies, from intense, while netting and hauling the catch aboard, to relatively relaxed, while traveling between home port and the fishing grounds. However, lookout watches are a regular responsibility, and crew members must be prepared to stand watch at prearranged times of the day or night. Although fishing gear has improved, and operations have become more mechanized, netting and processing fish are strenuous activities. Whereas newer vessels have improved living quarters and amenities, such as television and shower stalls, crews still experience the aggravations of confined conditions, continuous close personal contact, and the absence of family.

Employment

Fishers and fishing vessel operators held an estimated 51,000 jobs in 1998. About 6 out of 10 were self-employed. Nearly half worked variable schedules, to accommodate sudden changes in weather or fish migration patterns. Besides fishing conducted primarily to harvest food, some jobs involved sport fishing activities.

Training, Other Qualifications, and Advancement

Fishers usually acquire occupational skills on the job, many as members of families involved in fishing activities. No formal academic requirements exist. Operators of large commercial fishing vessels are required to complete a Coast Guard-approved training course. Students can expedite their entrance into these occupations by enrolling in 2-year vocational-technical programs offered by secondary schools. In addition, some community colleges and universities offer fishery technology and related programs that include courses in seamanship, vessel operations, marine safety, navigation, vessel repair and maintenance, health emergencies, and fishing gear technology. Courses include hands-on experience. Secondary and postsecondary programs are normally offered in or near coastal areas.

Experienced fishers may find short-term workshops offered through various postsecondary institutions especially useful. These programs provide a good working knowledge of electronic equipment used in navigation and communication and the latest improvements in fishing gear.

Captains and mates on large fishing vessels of at least 200 gross tons must be licensed. Captains of sport fishing boats used for charter, regardless of size, must also be licensed. Crew members on certain fish processing vessels may need a merchant mariner's document. The U.S. Coast Guard issues these documents and licenses to individuals who

meet the stipulated health, physical, and academic requirements. (For information about merchant marine occupations, see the statement on water transportation occupations elsewhere in the *Handbook*.)

Fishers must be in good health and possess physical strength. Good coordination and mechanical aptitude are necessary to operate, maintain, and repair equipment and fishing gear. Fishers need perseverance to work long hours at sea, often under difficult conditions. On large vessels, they must be able to work as members of a team. Fishers must be patient, yet always alert, to overcome the boredom of long watches, when not engaged in fishing operations. The ability to assume any deckhand's functions, on short notice, is important. As supervisors, mates must be able to assume all duties, including the captain's, when necessary. The captain must be highly experienced, mature, decisive, and possess the business skills needed to run business operations.

On fishing vessels, most fishers begin as deckhands. Deckhands whose experience and interests are in ship engineering—maintenance and repair of ship engines and equipment—can eventually become licensed chief engineers on large commercial vessels, after meeting the Coast Guard's experience, physical, and academic requirements. Divers in fishing operations can enter commercial diving activity—for example, repairing ships or maintaining piers and marinas—usually after completion of a certified training program sponsored by an educational institution or industry association. Experienced, reliable deckhands who display supervisory qualities may become boatswains. Boatswains may, in turn, become second mates, first mates, and finally captains. Almost all captains become self-employed, and the overwhelming majority eventually own, or have an interest in, one or more fishing ships. Some may choose to run a sport or recreational fishing operation. When their seagoing days are over, experienced individuals may work in or, with the necessary capital, own stores selling fishing and marine equipment and supplies. Some captains may assume advisory or administrative positions in industry trade associations or government offices, such as harbor development commissions or in teaching positions in industry-sponsored workshops or educational institutions.

Job Outlook

Employment of fishers and fishing vessel operators is expected to decline through the year 2008. These occupations depend on the natural ability of fish stock to replenish itself through growth and reproduction, as well as on governmental estimates of the health of fisheries. Many operations are currently at or beyond maximum sustainable yield, and the number of workers who can earn an adequate income from fishing is expected to decline. Job openings will arise from the need to replace workers who retire or leave the occupation. Some fishers and fishing vessel operators leave the occupation, because of the strenuous and hazardous nature of the job and the lack of steady, year-round income.

In many areas, particularly the North Atlantic, pollution and excessive fishing have adversely affected the stock of fish and, consequently, the employment opportunities for fishers. In some areas, States have greatly reduced permits to fishers, to allow stocks of fish and shellfish to replenish themselves, idling many fishers. Other factors contributing to the projected decline in employment of fishers include the use of sophisticated electronic equipment for navigation, communication, and fish location; improvements in fishing gear, which have greatly increased the efficiency of fishing operations; and the use of highly automated *floating processors*, where the catch is processed aboard the vessel. Sport fishing boats will continue to provide some job opportunities.

Earnings

Median weekly earnings of full-time fishers and fishing vessel operators were about $386 in 1998. The middle 50 percent earned between $292 and $641. The highest paid 10 percent earned over $785, whereas the lowest paid 10 percent earned less than $194.

Earnings of fishers and fishing vessel operators normally are highest in the summer and fall—when demand for services peaks and environmental conditions are favorable—and lowest during the winter. Many full-time and most part-time workers supplement their income by working in other activities during the off-season. For example, fishers may work in seafood processing plants, establishments selling fishing and marine equipment, or in construction.

Earnings of fishers vary widely, depending upon the specific occupational function, size of the ship, and the amount and value of the catch. The costs of the fishing operation—operating the ship, repair and maintenance of gear and equipment, and the crew's supplies—are deducted from the sale of the catch. Net proceeds are distributed among the crew members in accordance with a prearranged percentage. Generally, the ship's owner—usually its captain—receives half of the net proceeds, which covers any profit as well as the depreciation, maintenance, and replacement costs of the ship.

Related Occupations

Numerous occupations involve outdoor activities similar to those of fishers and fishing vessel operators. Among these are fishing and hunting guides, fish hatchery and aquaculture workers, game wardens, harbor pilots, merchant marine officers and seamen, and wildlife management specialists.

Sources of Additional Information

For information on licensing requirements to fish in a particular area, contact:

☛ National Marine Fisheries Service, NMFS Scientific Publications Office, 7600 Sand Point Way NE., Seattle, WA 98115.

Names of postsecondary schools offering fishing and related marine educational programs are available from:

☛ Marine Technology Society, 1828 L St. NW., Suite 906, Washington, DC 20036-5104.

Information on licensing of fishing vessel captains and mates, and requirements for merchant mariner documentation, is available from the U.S. Coast Guard Marine Inspection Office or Marine Safety Office in your State, or:

☛ Office of Compliance, Commandant (G-MOC-3) 2100 Second St. SW., Washington, DC 20593.

☛ Licensing and Pilotage Branch, National Maritime Center, 4200 Wilson Blvd., Suite 510, Arlington, VA 22203-1804.

Food Processing Occupations

Butchers and Meat, Poultry, and Fish Cutters

(O*NET 65023, 89802, and 93938)

Significant Points

- Workers in meatpacking plants have among the highest incidences of injury and illness of all workers.
- Length of training ranges from a few days for some cutters to 1 or 2 years for highly skilled butchers.
- Job growth will be concentrated among lower skilled meat, poultry, and fish cutters, as more meat cutting and processing shifts from retail stores to food processing plants.

Nature of the Work

Butchers and meat, poultry, and fish cutters are employed at different stages in the process that converts animal carcasses into manageable